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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/485,153

02/04/2000

OSAMU YOKOYAMA

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11/15/2002

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EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/485,153

Applicant(s)

YOKOYAMA ET AL.

Examiner

Tarifur R Chowdhury

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,7,9-11,13-16 and 19-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7,9-11,13-16 and 19-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 22 is objected to because of the following informalities: It appears that claim 22 is a dependent claim. However, the recitation presents the claim as being independent. Therefore, further clarification is needed to understand applicant's intention. For examination purposes the examiner has treated claim 22 as a dependent claim.
2. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. **Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Sedlmayr, US 2002/10154404 A1.**

5. Sedlmayr discloses in page 29, paragraph 0032, and shows in Fig. 8E, a light source device, comprising:

- a first light source (174) for emitting first light of a first color;
- a second light source (172) for emitting light of a second color;
- a third light source (170) for emitting light of a third color;
- a first polarization converter (142) for aligning a polarization direction of first light by converting one polarization component to the other polarization component (light beam 198 of P polarization is altered after passing through the polarization converter 142);
- a second polarization converter (140) for aligning a polarization direction of first light by converting one polarization component to the other polarization component (light beam 196 of P polarization is altered after passing through the polarization converter 140);
- a first polarization converter (138) for aligning a polarization direction of first light by converting one polarization component to the other polarization component (light beam 194 of P polarization is altered after passing through the polarization converter 138);
- a dichroic prism as a color synthesizing optical system (93) for synthesizing the first, second and third light each having the aligned polarization direction.

Accordingly, claims 1 and 3 are anticipated.

As to claim 4, Sedlmayr also discloses that the light sources can be light emitting diodes.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1-3, 9, 13-16 and 20-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji et al (hereinafter Kenji), JP 08-140107 (provided by the applicant) in view of Booth et al., (Booth), USPAT 5,973,833.**

9. Kenji discloses in the abstract and shows in Fig. 9, a projection type image display device, comprising:

- a first light source (1111) for emitting light of a first color (red);
- a second light source (1211) for emitting light of a second color (green); and
- a third light source (1311) for emitting light of a third color (blue);

- a dichroic prism (53) (applicant's color synthesizing optical system) for synthesizing light from the first light source (1111), light from the second light source (1211) and light from the third light source (1311).

Kenji differs from the claimed invention because he does not explicitly disclose the polarization converter for aligning a polarization direction of light by converting one polarization component to other polarization component.

Booth discloses a polarization converter including a reflective polarizer and a quarter wave retarder (col. 4, lines 53-56). Booth further discloses that polarization converter significantly reduces the loss or absorption of light that normally occurs in LCD projector and thus increases brightness output (col. 7, lines 29-35). Booth also discloses that a polarization converter receives generally collimated light of arbitrary polarization and converts it to light of a selected polarization (col. 1, lines 42-45).

Booth is evidence that ordinary workers in the art would find a reason, suggestion or motivation for employing a polarization converter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device of Kenji such that introduce polarization converter so that the brightness output is increased, as per the teachings of Booth.

Accordingly, claims 1-3 and 13 would have been obvious.

As to claims 9 and 14, using flat-panel fluorescent light sources or flat-panel electroluminescent elements light sources are well known in the art and thus would have been obvious to optimize device performance.

As to claims 15 and 16, it is common that electroluminescent elements have organic thin films as light emitting layers and electroluminescent elements comprising optical resonators are well known in the art and thus would have been obvious to optimize device performance.

As to claim 20, it is clear from the figures as well as the disclosure that the first, second and third light sources repeatedly light in order.

As to claim 21, Kenji further shows in figure 1 that light from the light source is modulated in the light modulating element and light so modulated is magnified by a projection lens and displayed.

As to claim 24, employing color filters to obtain a color display is well known in the art and thus would have been obvious.

As to claim 25, using a reflection type light modulating element to obtain a reflective display is well known in the art and thus would have been obvious.

As to claim 26, Kenji discloses in the abstract that the light modulating element forms, with time division, a first color component image, a second color component image, and a third color component image. Further the display device of Kenji display a color image by sequential display of the first, second and third color components in the light modulating element and by sequentially lighting of the first, second and third light sources corresponding to the sequential displays.

As to claims 22 and 27, Kenji also shows in figure 9 that the light modulating element is a transmissive type liquid crystal element, the light source is deployed

opposite one face of the liquid crystal element and images formed on the liquid crystal element are magnified by the projection lens and displayed.

As to claim 23 and 28, viewing magnified virtual images of images displayed is well within the level of ordinary skill in the art and thus would have been obvious.

As to claims 29 and 30, it is common and known that a polarization converter typically convert S polarization to P polarization or vice versa wherein the polarization direction of the S polarization component and the P polarization components are perpendicular to each other and the rotational directions are opposite to each other.

10. Claims 1-4, 6, 7, 13, 19-25, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoichi et al (hereinafter Shoichi), JP 41-0123512 (provided by the applicant) in view of Booth.

11. Shoichi discloses in the abstract and shows in figure 2, a light source for a color liquid crystal display device, comprising:

- a first light source (21R) for emitting light of a first color;
- a second light source (21G) for emitting light of a second color;
- a third light source (21B) for emitting light of a third color; characterized in

that:

light from the first, second and third light source are synthesized by a color synthesizing optical system (23a).

Shoichi differs from the claimed invention because he does not explicitly disclose the polarization converter for aligning a polarization direction of light by converting one polarization component to other polarization component.

Booth discloses a polarization converter including a reflective polarizer and a quarter wave retarder (col. 4, lines 53-56). Booth further discloses that polarization converter significantly reduces the loss or absorption of light that normally occurs in LCD projector and thus increases brightness output (col. 7, lines 29-35). Booth also discloses that a polarization converter receives generally collimated light of arbitrary polarization and converts it to light of a selected polarization (col. 1, lines 42-45).

Booth is evidence that ordinary workers in the art would find a reason, suggestion or motivation for employing a polarization converter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device of Shoichi such that introduce polarization converter so that the brightness output is increased, as per the teachings of Booth.

Accordingly, claims 1, 2, 13, 19 and 20 would have been obvious.

As to claim 3, Shoichi shows in figure 5 that a dichroic prism is used as a color synthesizing optical system.

As to claim 4, Shoichi discloses in the abstract that plurality of light emitting diodes are deployed two-dimensionally in the first, second and third light sources, respectively.

As to claims 6 and 7, Shoichi shows in figures 2, 3 and 6 that lens array element are deployed between the first, second and third light sources and the color synthesizing optical system.

As to claims 21 and 22, Shoichi shows in figure 6 the display device having a transmissive type liquid crystal element as a light modulating element, the light source device being deployed opposite one face of the liquid crystal element and light from the light source is modulated in the light modulating element and is magnified by a projection lens and displayed.

As to claim 23, viewing magnified virtual images of images displayed is well within the level of ordinary skill in the art and thus would have been obvious

As to claim 24, employing color filters to obtain a color display is well known in the art and thus would have been obvious.

As to claim 25, using a reflection type light modulating element to obtain a reflective display is well known in the art and thus would have been obvious.

As to claims 29 and 30, it is common and known that a polarization converter typically convert S polarization to P polarization or vice versa wherein the polarization direction of the S polarization component and the P polarization components are perpendicular to each other and the rotational directions are opposite to each other.

12. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji in view of Booth as applied to claims 1-3, 9, 13-16 and 20-30 above and further in view of Miyashita et al (hereinafter Miyashita), PN 6,011,602.

13. Kenji does not explicitly disclose the claimed prism array. However, as taught by Miyashita by employing a prism array between the light source and the optical system, it is possible to better direct the light. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ a prism array

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between the light source and the optical system of Kenji in order to direct the light better.

Accordingly, claims 10 and 11 would have been obvious.

14. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoichi in view of Booth as applied to claims 1-4, 6, 7, 13, 19-25, 29 and 30 above and further in view of Miyashita et al (hereinafter Miyashita), PN 6,011,602.

15. Shoichi does not explicitly disclose the claimed prism array. However, as taught by Miyashita by employing a prism array between the light source and the optical system, it is possible to better direct the light. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ a prism array between the light source and the optical system of Kenji in order to direct the light better.

Response to Arguments

16. Applicant's arguments filed on 08/23/02 have been fully considered but they are not persuasive.

In response to applicant's argument that Kenji and Shoichi (Yoshii) do not disclose a light source that includes three color light sources and a synthesizing optical system for synthesizing light from the three color sources, applicant's attention is respectfully requested to Fig. 9 of Kenji and Fig. 2 of Yoshii which clearly shows the elements.

In response to applicant's argument that Miyashita does not disclose a light source that includes three color light sources and a synthesizing optical system for

synthesizing light from the three color sources, it is respectfully pointed out to applicant that Miyashita was used to find a teachings for using prism array not to find a teaching for using light sources and synthesizing optical systems.

In response to applicant's argument that Booth does not disclose a polarization converter that aligns a polarization direction of light by converting one polarization component to the other polarization component, applicant's attention is respectfully pointed out to the explanation above. Further, it should be noted that the function of a polarization converter is to align a polarization direction of light by converting one polarization component to the other.

Therefore, the rejection was proper and thus maintained.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) USPAT 6,336,724 and USPAT 6,176,586 disclose the use a polarization converter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

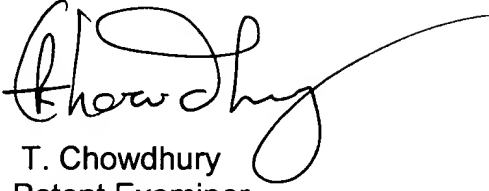
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

TRC
November 07, 2002



T. Chowdhury
Patent Examiner
Technology Center 2800